Waste Forecasts and Residual Waste Treatment Capacity

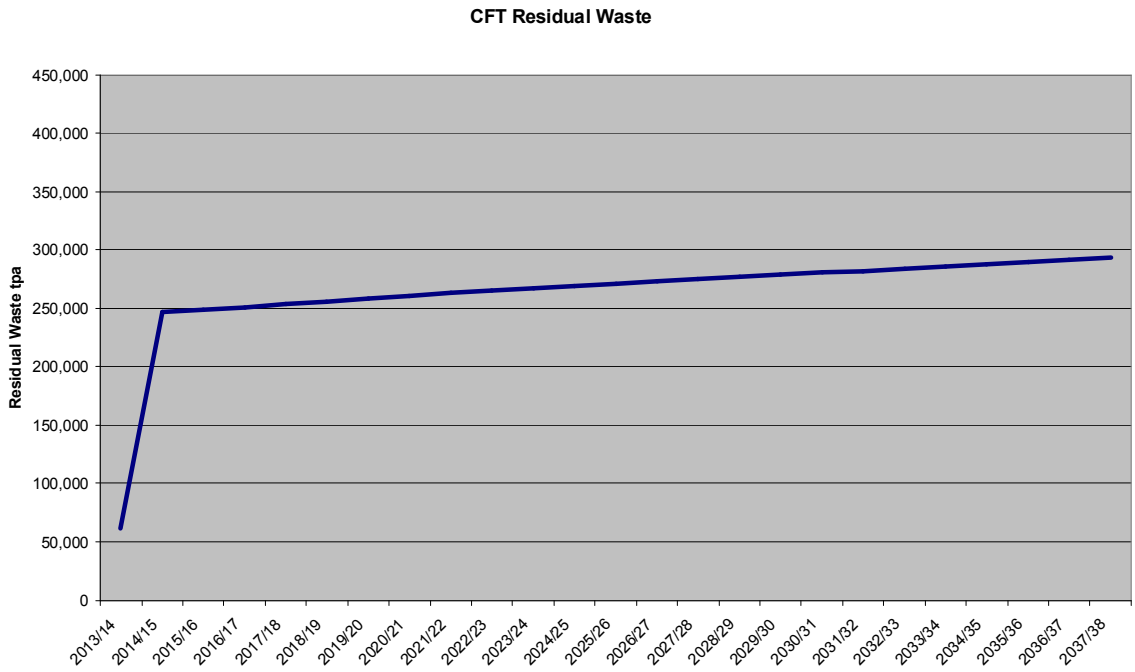
Base Waste Flows

York and North Yorkshire currently produce approximately 450,000 tonnes per annum (tpa) of municipal waste. Of this, approximately 278,000 tonnes was sent to landfill in 2009/10 as 'residual waste'. This included nearly 37,000tonnes of commercial waste collected by district councils, and 18,000tonnes of inert waste.

Predicted future waste tonnages are based on the key assumption that growth will be driven by predicted growth in the number of households in the area with the following adjustments:

- The amount produced per household would reduce annually by a notional 0.25% to recognise the aspiration for waste prevention (equivalent to a compound reduction of approximately 7.4% over the period)
- Amounts of commercial waste collected by district and borough councils would remain constant throughout the period.
- Recycling and composting would increase broadly according to district and borough council projections to a combined performance level of 48% in 2013/4
- The effect of the economic downturn would result in reduced waste tonages for the first years of the model
- Household and commercial waste delivered to household waste recycling centres (HWRCs) would reduce in the first years of the model as a consequence of revised operating policies

Waste flow projections at the time of inviting final tenders for the PFI contract (CFT) estimated that the amount of residual waste requiring treatment by the contractor would increase to approximately 298,000 tpa in 2039/40.



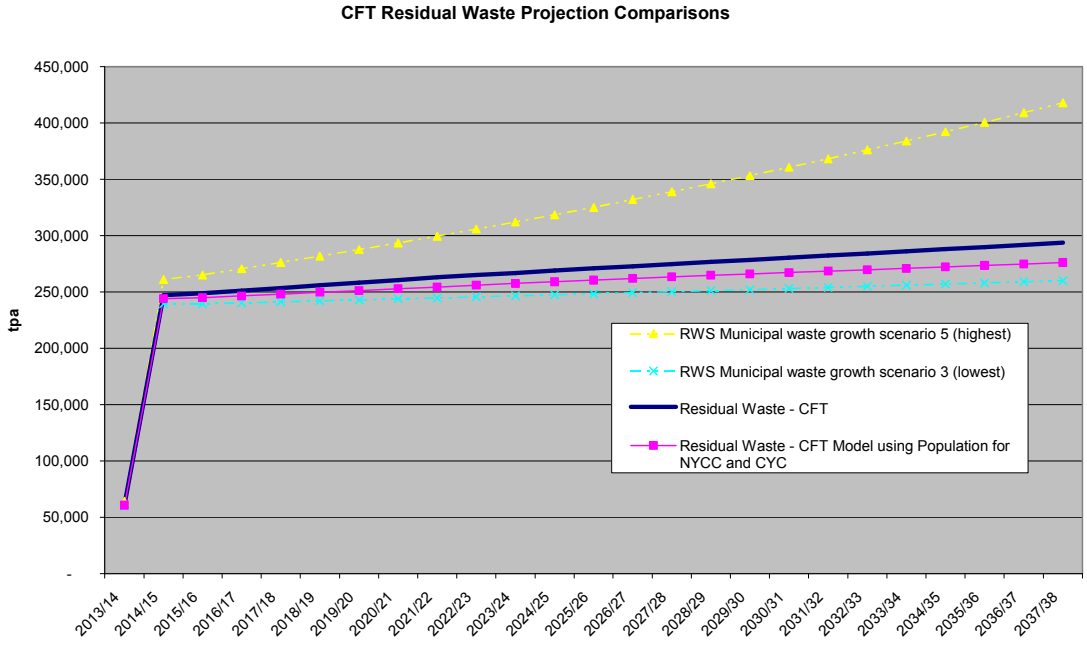
Comparisons to Other Forecasts

Forecast waste arisings have been compared to projections based on population growth rather than household growth, and by comparing total projections against those in the Regional Waste Strategy (RWS).

Growth based on population forecasts ignores the trend towards lower household occupancy and the consequential likelihood of higher waste arisings per person. The risk is therefore that growth based on population forecasts will under represent future waste tonnages. Projections of residual waste forecast on the basis of 2006 population forecasts (those available at CFT) from the Office of National Statistics (ONS) results in 19,000 tpa less (6 %) forecast residual waste by 2039/40.

Comparison to RWS forecast municipal waste for York and North Yorkshire shows that projected waste tonnages are towards the lower end of the range of predictions in the RWS.

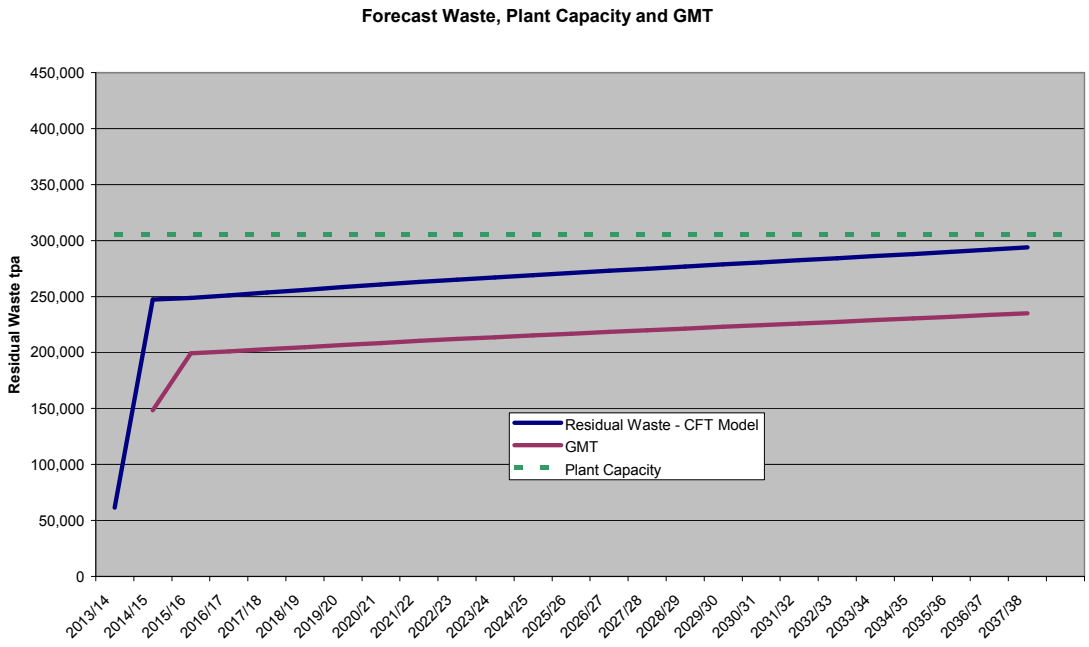
The conclusion from these comparisons carried out at CFT was that forecast municipal waste based on housing growth with adjustments was reasonable.



Plant Capacity and Guaranteed Minimum Tonnage

AmeyCespa have proposed to build a waste treatment plant sufficient to treat 305,000 tpa of residual waste, with a requirement for a guaranteed minimum tonnage (GMT) equivalent to 80% of residual waste forecast at call for final tenders (CFT).

At the time of final tenders, the waste from York and North Yorkshire was predicted to account for between 61% the provided capacity in year one, to 98% in year 25. The remaining capacity is to be filled using locally available commercial and industrial waste.



Sensitivities of Assumptions

Waste forecasts are updated regularly to take account of changes to waste collection practices, baseline performance and other impacts. Changes that may have an effect on future waste forecasts since the call for final tenders include:

- Deeper and more prolonged economic recession than first envisaged
- Externalisation of collection arrangements by Hambleton and Richmondshire Councils
- Repeal of Regional Spatial Strategies and local determination of future housing numbers
- Revised ONS population forecasts

The potential impact and sensitivity of waste forecasts to these issues is discussed below.

Potential Impact of economic recession

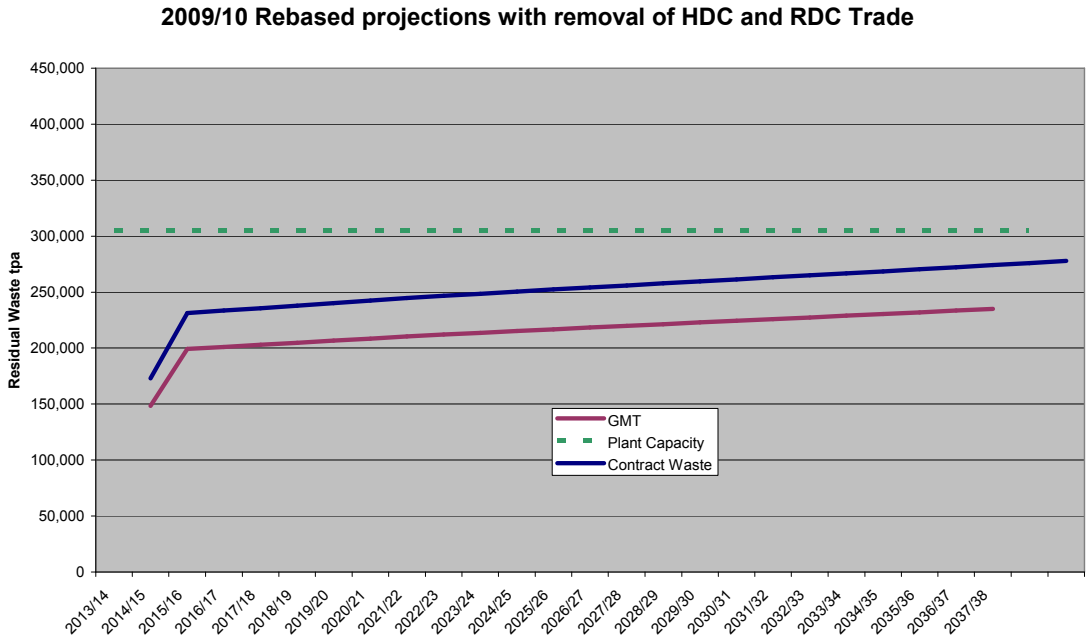
The prolonged recession has suppressed waste arisings more and for longer than originally envisaged. In year forecasts have been routinely adjusted using actual waste arisings to date. Analysis of these projections suggests that the baseline for waste tonnage forecasts may be overstated by some 13,900 tonnes (approx 4.7%) as a direct consequence of the continuing recession. This is a one off initial adjustment to the model.

Impact of Externalisation of Trade Waste Collection Services

Hambleton and Richmondshire District Councils have externalised their trade waste collection services and therefore no longer collect commercial waste. This has reduced the municipal waste arising in these districts by a total of approximately 6,500 tpa. This represents a one off step change to the model.

Other WCAs are considering the potential to externalise trade waste collections. Externalisation represents a short term solution to the problem of WCA trade services becoming more uncompetitive as a result of increasing costs for municipal waste. In practice, delivery of a long term waste treatment service is likely to increase the amounts of commercial waste collected by district councils as marginal costs (therefore charges) of disposal will be below alternative costs of landfill. County and district councils will become more competitive. Given the uncertainty on this waste in future it is assumed trade waste arisings remain fixed for the period of the contract although it is possible if not likely that where businesses are retained the amounts collected will increase.

The combined impact of rebasing forecasts and removing trade waste from future projections for Hambleton and Richmondshire District Councils is to reduce projected contract waste in 2039/40 from approximately 298,000 tonnes at CFT to 278,000 tonnes. Projected contract waste under this scenario is approximately 116% of GMT for all years of the contract.



Potential Impact of Repeal of RSS and Revised Population Forecasts

As discussed above, the original forecasts were compared to growth driven by population forecasts rather than housing. However, the recent repeal of the Regional Spatial Strategy (RSS) and revised ONS population forecasts makes it appropriate to subject this sensitivity to further analysis.

Growth in housing in the waste model is projected from a combination of Department for Communities and Local Government (DCLG) housing forecasts and RSS housing allocations, with RSS being used for York and DCLG forecasts for North Yorkshire. DCLG forecasts tend to be slightly higher but provided a better reflection of past performance for North Yorkshire prior to the economic downturn.

The Regional Spatial Strategy made provision for housing growth in the Region to 2026 at local authority level. In the period 2004-08 the target was for 2,850 additional dwellings per year in York and North Yorkshire and 3,170 per year for the period 2008-26. However, during 2004-08 completions exceeded the targets at both the regional and sub-regional level. In York and North Yorkshire completions averaged 3,015 dwellings per year.

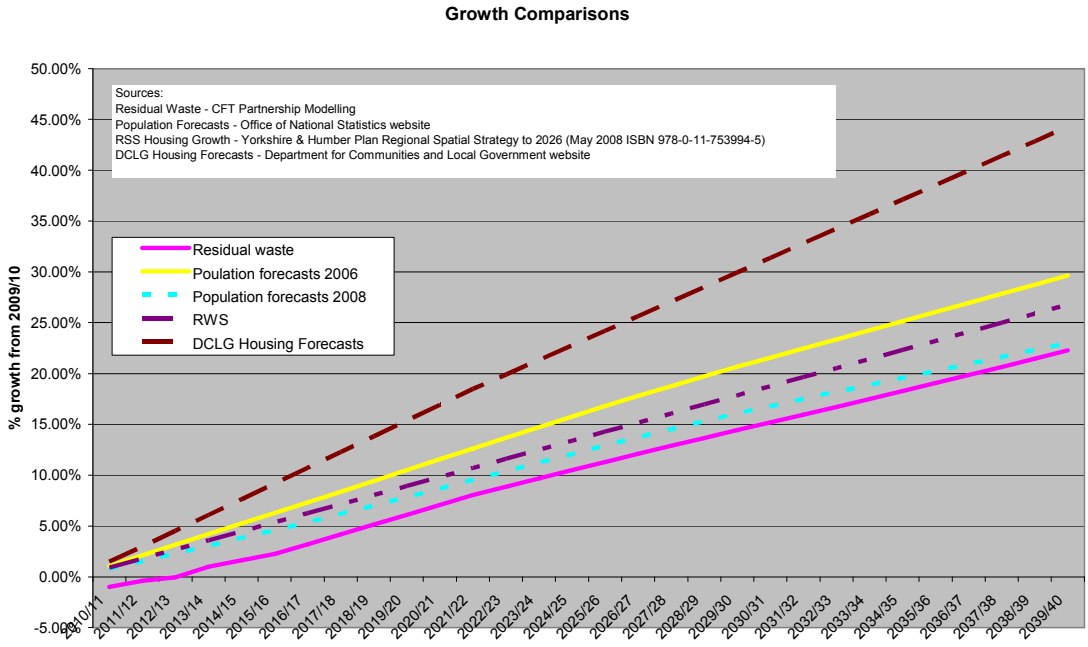
The economic downturn has had a significant impact on the house building industry in the region. In NY housing completions in 2008-9 fell to 1,849, substantially lower than the RSS target. There has been a slight rise in housing starts since the end of 2008, but they remain at about half the pre 2007 rate. The impact of these reduced completions is taken into account in the waste model by using updated base year waste tonnages and through the overall 'adjustment'.

Despite the repeal of RSS, the evidence base remains relevant. In this context, the National Housing and Planning Advisory Unit (NHPAU) has suggested that the regional targets for housing growth in the former RSS should be increased by up to 18%, but there are no sub-regional proposals from NHPAU for North Yorkshire.

Future housing growth estimates are therefore uncertain but housing demand in North Yorkshire has always been strong and is probable that the market will recover more quickly here than elsewhere in the region. DCLG and RSS housing forecasts therefore continue to provide a credible evidence base for waste projections until such time as they are superseded.

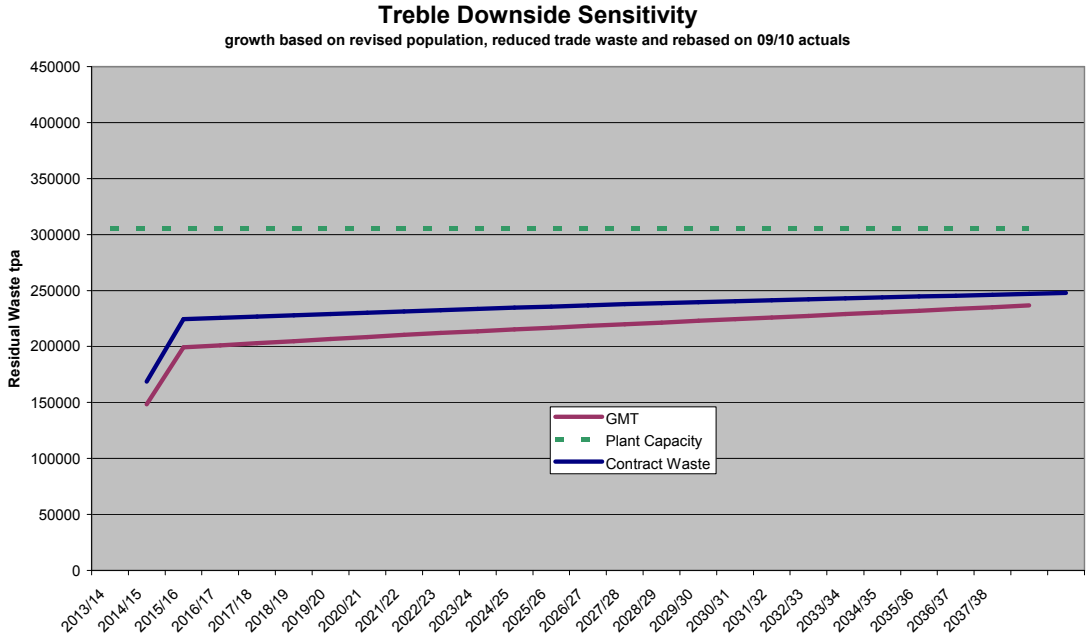
However, original waste projections using household growth as proxy for waste growth were compared to projections using 2006 population forecasts as the driver for growth. The Office of National Statistics published revised population forecasts in 2009 which show a reduction in population forecasts for York and North Yorkshire compared to previous projections. Residual waste projected on the basis of updated population forecasts would be some 12,000 tpa less in 2039/40 than projected using previous population forecasts.

The level of this difference is not considered sufficient grounds alone to question the validity of continuing to project waste growth on the basis of housing forecasts, and forecast residual waste growth from 2009/10 to 2039/40 remains lower than growth in both housing and population forecasts.



It is however prudent to revisit the comparison carried out prior to CFT and combine the impact of rebasing projections, removing trade waste from Hambleton and Richmondshire Districts and then projecting growth on the basis of future population forecasts.

The impact of this treble down side sensitivity is to reduce predicted residual waste arisings for 2039/40 from 298,000 tonnes to 248,000tonnes. Forecast contract waste under this scenario varies from 113% of GMT in the first year of the contract to 104% in the final year. However, a projection on this basis ignores the potential for increasing trade waste collections from WCAs and the trend towards lower household occupancy and therefore proportionally higher waste arisings per head.



This scenario and all others considered thus far ignores the potential for municipal solid waste (MSW) to increase as a consequence of the Government review of the definition of MSW in line with European Waste Framework definitions, and the review of "Schedule 2" wastes. The Controlled Waste Regulations 1992 provide the basis for the UK definitions of Commercial, Industrial and Domestic waste. DEFRA are currently reviewing these Regulations and the outcomes likely to include changes to the definitions of these waste groups. DEFRA are also reviewing the definition of Municipal Waste to bring it in line with European definitions.

One possible outcome of these reviews is that waste streams previously included within the Commercial and Industrial definition may be re-defined to be included within the municipal waste stream. This has not been factored into future projections.

Recycling Performance

York and North Yorkshire councils currently recycle or compost about 45% of household waste. It is assumed in the Councils' future waste forecasts that this will improve further as kerbside collection systems are improved and become more effective. Current estimates are that Partnership kerbside recycling performance will peak at nearly 49%.

AmeyCespa guarantee to recycle a minimum of 5% of contract waste which will improve recycling performance overall to approximately 52%. In practice, AmeyCespa plan to recycle up to 10% of contract waste meaning that on current projections, overall recycling will increase to approximately 54% by 2015.

If recycling of incinerator bottom ash (IBA) is included (as in a number of European countries), the combined recycling and composting performance

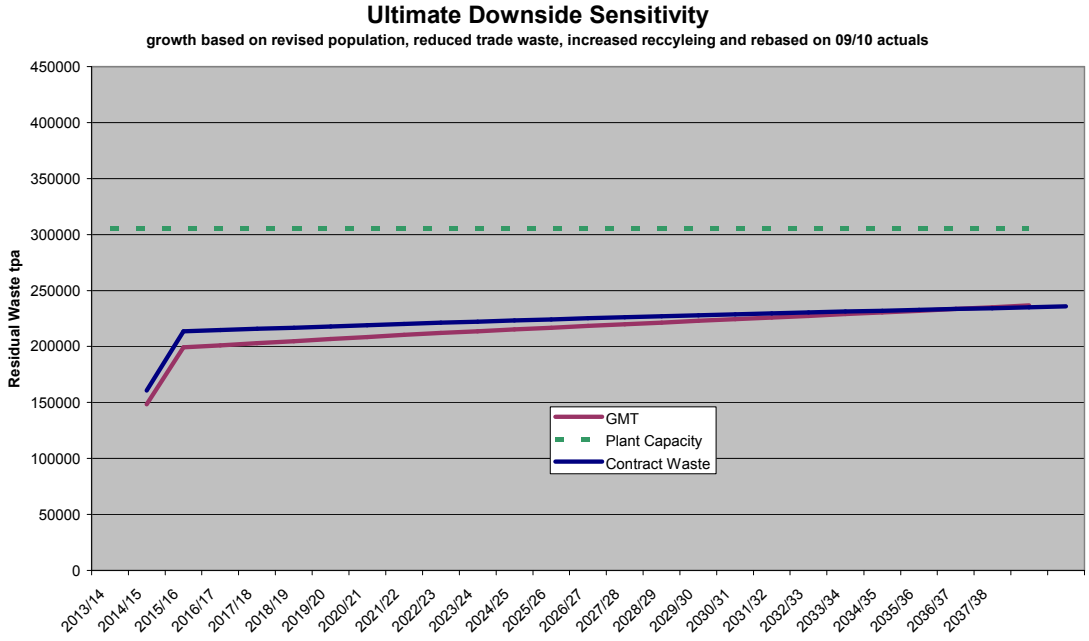
will approach 65%. However, IBA is currently excluded from the definition of recycled material.

It has been suggested that residual waste treatment capacity would be significantly reduced if the Partnership targeted higher recycling performance. Whilst there is some potential to improve recycling beyond the predicted levels (through improving capture rates or increasing targeted materials), the opportunity through traditional kerbside recycling is limited.

The waste flow model uses individual waste compositions for each district area. Actual and predicted recycling performance is compared to waste composition to show associated capture rates for each recycled material. Sensitivity analysis has been run on capture rates to improve the performance of the lowest areas towards the high end of achievability against a common range of materials. This indicates the potential to increase kerbside recycling of materials that have a proven and reliable market by a further 2-3% which, if combined with the other improvements could take performance measured against National Indicators (excluding incinerator bottom ash) to over 56%.

This would effectively stretch recycling performance across York and North Yorkshire to the levels of the best Counties in England but would only reduce predicted contract waste by some 11-14,000 tpa over the 25 year contract period, and would therefore have relatively little impact on demand for residual waste treatment capacity.

The impact of this stretch in recycling performance, if combined with the sensitivities of rebasing the model with growth then based on revised population forecasts rather than housing projections, and reduced trade waste, would be to further reduce projected contract waste in 2039/40 to approximately 236,000 tonnes. This is anultimate downside sensitivity however forecast tonnages still exceed GMT in all but the final four years of the contract. The total tonnage below GMT in these final four years under this scenario is less than 5,000 tonnes.



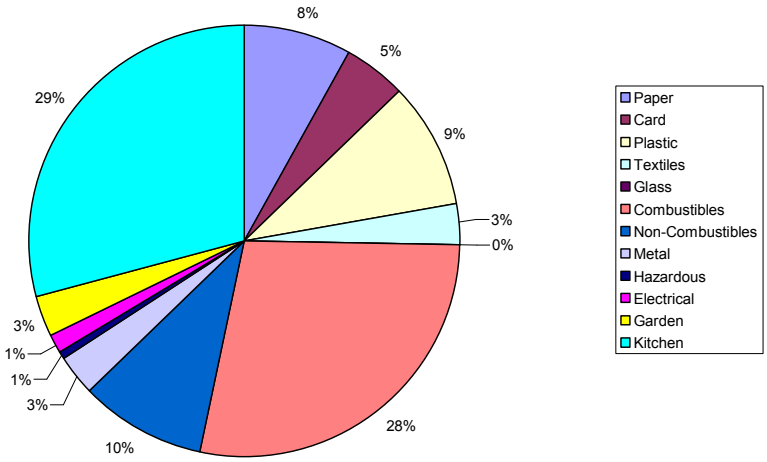
It is important to note that there is no commitment or statutory obligation on the waste collection authorities to improve recycling performance beyond current levels. There is therefore a risk that planned improvements and/or further stretch performance beyond planned levels will not materialise and residual waste tonnages may be higher than forecast.

Food Waste

It is suggested that the separate collection of food waste will enable significant increases in recycling performance though its treatment either via anaerobic digestion or in-vessel composting. The argument is that this diverts food waste from landfill and significantly reduces the need for residual waste treatment capacity.

Food waste diverted through these means would count towards recycling under the current definition, provided the material is returned to land, either as an organic growth medium (e.g. compost) or in remediation of brown field land. A strategy including separate collection and processing of food waste in this way can therefore deliver higher recycling performance, although it offers no benefit compared to the proposed PFI contract in terms of diversion from landfill. It also necessarily entails a separate collection mechanism for food waste to be introduced, and householders to participate in its use.

Residual waste Composition 2015/16



Composition analysis shows approximately 29% of the residual waste to be kitchen type organic waste. This is equivalent to 66-80,000 tpa over the life of the PFI contract and more than the 40,000 tonnes per annum which is proposed to be treated through the AD plant. However, evidence from trial food waste collection schemes suggest that typical capture rates for food waste could be about 40%. This equates to between 26-32,000tpa over the life of the PFI, which if processed separately and returned to land, would add a further 5% to the combined recycling performance taking it to over 60%. As the digestate would not be incinerated, under this scenario there is a consequential reduction in EFW demand.

Whilst the AD element of the proposed PFI solution does not contribute towards recycling performance, the AD plant proposed by AmeyCespa will process 40,000tpa of organic waste mechanically separated from the residual waste. This represents a capture rate over the life of the contract significantly higher than is likely to be delivered through separate kerbside collections.

The benefit of separate food waste collections rolled out across the area would be to increase recycling performance by some 5% but it would not avoid the need for waste treatment. Allowing for a 40% capture rate of kitchen waste and increased recycling, York and North Yorkshire would still have between 185,000tpa and 205,000tpa of residual waste requiring landfill or treatment over the period between 2014 and 2039.

Separate food waste collections offer no benefit compared to the PFI proposal in terms of diversion from landfill. The principle benefit is in being able to claim the performance as recycling, and the potential to reduce the remaining residual waste treatment capacity. However, the increase in recycling is perverse compared to EfW. Both AD and EfW processes are 'recovery', producing energy, emissions and a residue which is recycled, but material into AD counts as recycled under the definition (if returned to land), whereas recycled EFW bottom ash does not. In real terms, the proposed PFI solution will enable the recycling of over 65% of household waste (including IBA) without the need for separate kitchen waste collections.

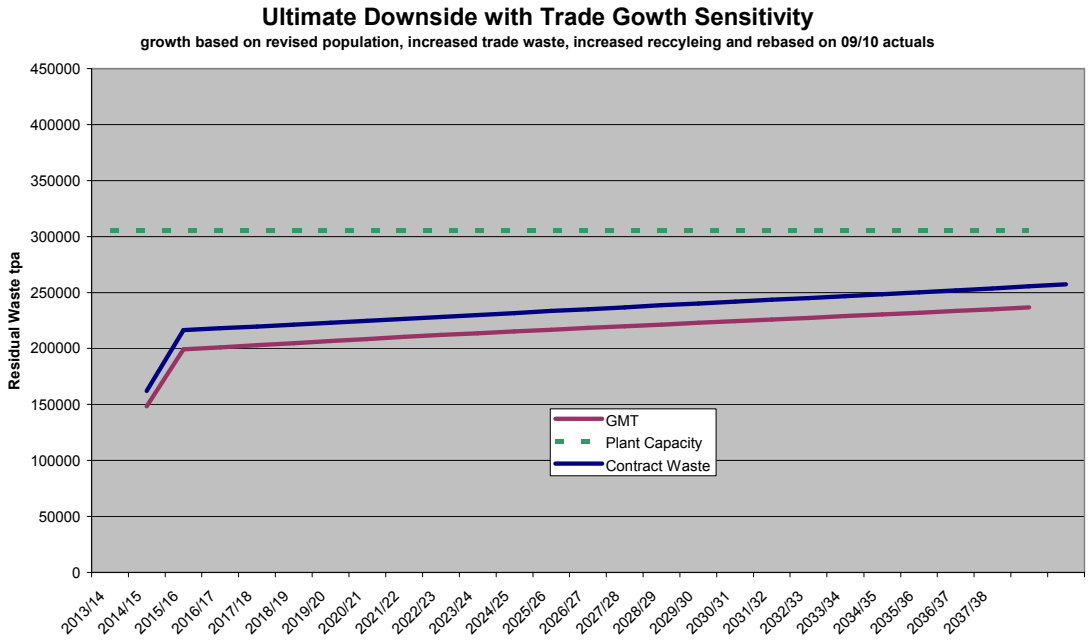
The reduction in treatment capacity as a consequence of separate food waste collections is similarly over stated as the reduction is notional in overall terms, and is likely to entail **less** organic food waste being processed through AD. Separate food waste collections will not negate the need for other treatment capacity. The proposed contract allows for the treatment of separately collected kitchen waste therefore there would also be no impact on GMT. The 'spare' EFW capacity would then be made available for commercial and Industrial waste.

Commercial Waste

The sensitivities discussed above have focussed on down side scenarios. For reasons discussed above it has been assumed that amounts of commercial waste collected by district councils will remain static throughout the period of the contract. This is prudent but potentially underestimates the increased demand on the service that will occur with general economic growth in the sub region and as local authority prices become more competitive.

A further sensitivity has been modelled where district council commercial waste (where still collected by the council) increases broadly in line with projected economic growth at 2.5% p.a. Combining this with the other sensitivities of increased recycling and household growth based on population forecasts results in approximately 257,000 tonnes of residual waste requiring treatment in 2039/40. This is equivalent to approximately 108% of GMT.

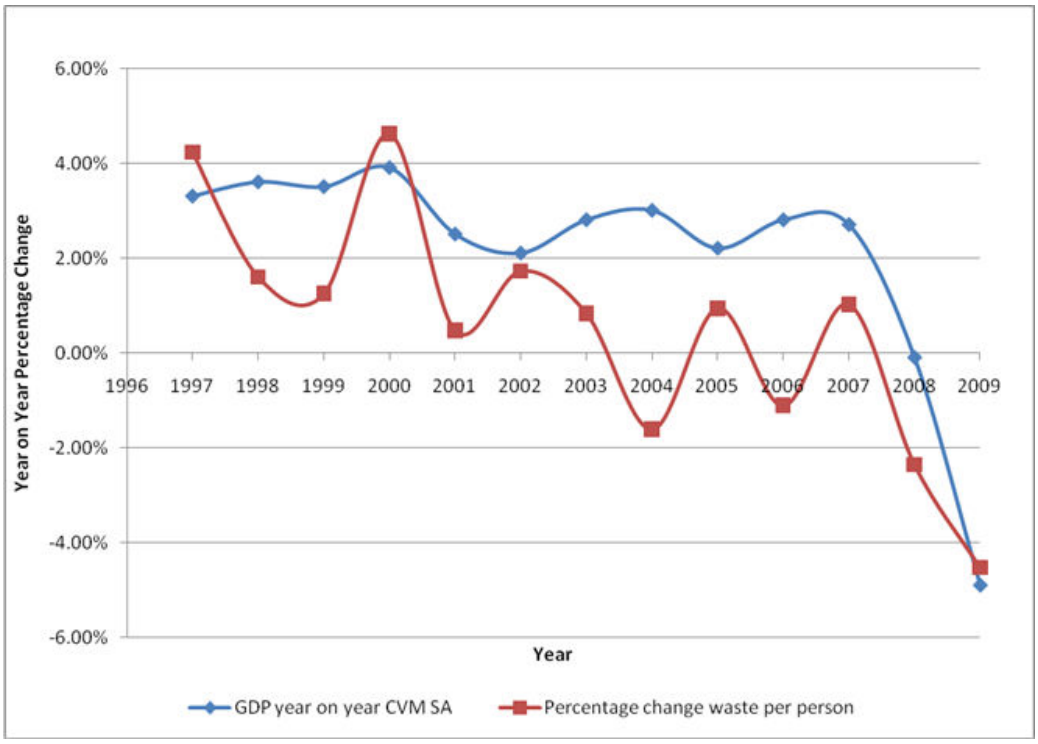
This is no more or less realistic than the down side sensitivities referred to above but provides some balance to indicate the potential that waste arisings may increase beyond projected amounts as well as decrease.



Waste Growth and Economic Growth

It has been suggested that the Council's waste forecasts overstate future waste tonnages and that recent reductions in waste represent a trend which should be extrapolated. It is acknowledged that there have been reductions in waste tonnages in recent years but this does not represent a long term trend.

There is a historic correlation between economic growth and waste growth. The previous Government's strategy was to seek to break these links but analysis of GDP and waste production in the UK over recent years shows this not to have been successful.



Waste tonnages have fallen nationally in recent years as GDP has reduced. Basing future waste projections on a trend of recent reductions provides a high risk strategy that assumes either that the link between economic growth and municipal waste will be reversed, or that the economy will continue to decline for a prolonged period. Neither of these assumptions is considered realistic.

As detailed above, assumptions on forecast waste tonnages use projected housing numbers as a proxy for growth. However, the model includes other prudent assumptions and tempers growth by including a compound reduction of 0.25% p.a. in recognition of the long term objective to reduce waste. Sensitivity analysis of the growth assumptions based on updated population forecasts (whilst still allowing for continued waste reduction) shows residual waste tonnages to always exceed GMT for the period of the contract. Modelled growth forecasts therefore have a sound evidence base and are prudent and reasonable.